

## REMARKS

Claims 1-13 are pending in this application. By this Amendment, claims 1, 5, 8, and 11 have been amended to more particularly point out and distinctly claim the irradiated butene-1 polymer material, support for which can be found at page 5, lines 20-25, page 6, lines 10-14, and the Examples. Entry and consideration of this Amendment is earnestly requested in that no new matter has been introduced.

### Rejections Under 35 U.S.C. § 102 and 103

#### A. Response to rejection of claims 1-13 under 35 U.S.C. §102(e) as anticipated by or, in the alternative, under 35 U.S.C. §103(a) as obvious over Dang-I and Dang-II.

In response to the rejection of claims 1-13 under 35 U.S.C. §102(e) as being anticipated by, or in the alternative, under 35 U.S.C. §103(a) as obvious over either U.S. Patent No. 6,869,982 of Dang et al. (“Dang-I”), having U.S. Patent Publication Number 2004/0102550, or U.S. Patent No. 6,677,395 of Dang et al. (“Dang-II”), having U.S. Patent Publication Number 2004/0102582, Applicants respectively traverse the rejection.

With respect to the rejection under §102, for a reference to anticipate an invention, all of the elements of that invention must be present in the reference. The test for anticipation under section 102 is whether each and every element as set forth in the claims is found, either expressly or inherently, in a single prior art reference. *Verdegaal Bros. V. Union Oil Co. of California*, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). The identical invention must be shown in as complete detail as is contained in the claim. *Richardson v. Suzuki Motor Co.*, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989). The elements must also be arranged as required by the claim. *In re Bond*, 15 USPQ2d 1566 (Fed. Cir. 1990).

With respect to the rejection under §103, the U.S. Supreme Court in *Graham v. John Deere Co.*, 148 U.S.P.Q. 459 (1966) held that non-obviousness was determined under §103 by (1) determining the scope and content of the prior art; (2) ascertaining the differences between the prior art and the claims at issue; (3) resolving the level of ordinary skill in the art; and, (4) inquiring as to any objective evidence of non-obviousness. Accordingly, for the Examiner to establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference

teachings. Second, there must be a reasonable expectation of success. See MPEP §2143. Finally, all claim limitations must be taught or suggested by the prior art. *In re Royka*, 490 F.2d 981, 180 U.S.P.Q. (BNA) 580 (C.C.P.A. 1974).

First, neither Dang-I nor Dang-II teach, suggest, or disclose the irradiated butene-1 polymer material as recited in the current claims which are formed in an oxygen-free environment. In contrast, both Dang-I and Dang-II teach irradiated materials formed by a series of steps including an irradiation step conducted under an inert gas, followed by several oxidation steps, then followed by an optional quenching step under an inert gas. The oxidation steps are conducted using oxygen levels from greater than 0.004% by volume but less than 15% by volume oxygen, with a most preferable range of from 1.3% to 3.0% by volume oxygen. The differences in the materials resulting from the two treatment methods would be clear to one skilled in the art. Processing the irradiated material in an oxygen-free environment results in a long-chain branching and high melt strength. In contrast, processing irradiated material in the presence of oxygen favors chain scission. The desire to achieve chain scission is evidenced in both Dang-I and Dang-II in their oxidation steps:

The holding time, which can be determined by one skilled in the art, depends upon the properties of the starting material, the active oxygen concentration used, the irradiation dose, and the temperature. \*\*\* The polymer is then held at the selected temperature and oxygen concentration conditions, typically for about 90 minutes, to increase the rate of chain scission and to minimize the recombination of chain fragments so as to form long chain branches, i.e., to minimize the formation of long chain branches. (col. 5, lines 42-61 Dang-I; col. 5, line 54 to col. 6, line 6, Dang-II, emphasis added)

Dang-I and Dang-II could not be clearer in teaching that the chain scission resulting from their oxidation steps is preferred relative to long-chain branching. Chain scission is desired by Dang-I and Dang-II because it permits the treated material to acquire the peroxide functionality necessary for serving as a dispersing or coupling agent

The concentration of peroxide groups formed on the polymer can be controlled easily by varying the radiation dose during the preparation of the irradiated polymer and the amount of oxygen to

which such polymer is exposed after irradiation. The oxygen level in the fluid bed gas stream is controlled by the addition of dried, filtered air at the inlet to the fluid bed. Air must be constantly added to compensate for the oxygen consumed by the formation of peroxides in the polymer. (col. 6, lines 42-50 Dang-I; col. 6, lines 54-62, emphasis added)

Therefore, not only do Dang-I and Dang-II not teach all the elements of the recited claims as required under §102, but actually teach away from the modifications suggested by the Examiner. For these reasons, Applicants respectfully submit that a *prima facie* case of Obviousness has not been made out. Reconsideration and withdrawal of the Rejection is respectfully requested.

Applicants respectfully request that a timely Notice of Allowance be issued in this case. Should the Examiner have questions or comments regarding this application or this Amendment, Applicants' attorney would welcome the opportunity to discuss the case with the Examiner.

The Commissioner is hereby authorized to charge U.S. PTO Deposit Account 08-2336 in the amount of any fee required for consideration of this Amendment.

This is intended to be a complete response to the Office Action mailed October 14, 2008.

Respectfully submitted,

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I hereby certify that this correspondence is being deposited with sufficient postage thereon with the United States Postal Service as first class mail in an envelope addressed to: Mail Stop Amendment, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on February 13, 2009.

*Alex A. Cutler*  
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February 13 2009  
Date of Signature

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